

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

July 2004

### RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA725)

#### Current Human Exposures Under Control

<b>Facility Name:</b>	<u>Delta Chemicals (Hydrocarbon Refining)</u>
<b>Facility Address:</b>	<u>Worthington Road, Worthington, PA 16262</u>
<b>Facility EPA ID #:</b>	<u>PAD088915822</u>

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

<u>  X  </u>	If yes - check here and continue with #2 below.
<u>      </u>	If no – re-evaluate existing data, or
<u>      </u>	if data are not available skip to #6 and enter “IN” (more information needed) status code

#### **BACKGROUND**

##### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

##### **Definition of "Current Human Exposures Under Controls" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

##### **Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program, the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

##### **Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be "contaminated"<sup>1</sup> above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale/Key Contaminants</u>
Groundwater	_____	<u>X</u>	_____	See below
Air (indoors) <sup>2</sup>	_____	<u>X</u>	_____	_____
Surface Soil (e.g., <2 ft)	_____	<u>X</u>	_____	_____
Surface Water	_____	<u>X</u>	_____	_____
Sediment	_____	<u>X</u>	_____	_____
Subsurface Soil (e.g., >2 ft)	_____	<u>X</u>	_____	_____
Air (outdoors)	_____	<u>X</u>	_____	_____

- X \_\_\_\_\_ If no (for all media) – skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient support documentation demonstrating that these "levels" are not exceeded.
- \_\_\_\_\_ If yes (for any media) – continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.
- \_\_\_\_\_ If unknown (for any media) – skip to #6 and enter "IN" status code.

Rationale and Reference(s):

Delta Chemical (also formerly doing business as Hydrocarbon Refining Inc) operated a solvent recycling facility from the 1970s to 1987. Wastes included methylene chloride, TCE, PCE, mineral spirits and paint-related solvents. Wastes were stored in drums and stored/treated in tanks. Two small (<1 acre) lagoons for stormwater control were on-site. A fire at the facility in 1982 caused a hazardous waste release, impacting groundwater. This fire and historical operations (contaminated run-off and spills) caused contamination of soils and the lagoon sediments. EPA (1987) and DEP (1986) ordered Delta to cease operation, remove wastes and conduct appropriate remediation. Delta had several of its generator customers remove several hundred drums of waste in 1987. Delta went out of business in 1987, after filing for bankruptcy. In 1989, DEP's contractor, OHM, removed 22,000 gallons of waste liquids and sludge from tanks, plus 25 overpacked drums of waste. In 1990, DEP's contractor, Ebasco, conducted site-wide soil, groundwater and surface water sampling to delineate the extent of contamination. VOC contamination (primarily PCE and TCE) was found in "perched" groundwater (and associated seeps), stream samples (an unnamed tributary to Buffalo Creek), stream sediment samples, lagoon sediment and other surface locations. DEP's Hazardous Sites Cleanup Program prepared a Statement of Decision (in 1994) and Consent Decree (in 1996), the later approved by PA Commonwealth Court, which established site remediation needs and cleanup standards:

- Soil Vapor Extraction for the soils
- Removal and off-site disposal of lagoon sediments and miscellaneous site waste
- Seep collection and treatment

Subsequent additional soil and water testing in 1995 led to DEP deciding that the lagoons sediments could be treated via the on-site SVE system.

<sup>1</sup>  
<sup>2</sup>

Additional site investigation in 1997 led to the removal and disposal of 1200 pounds of solvent soaked rags found buried near a concrete pad used for waste processing by Delta, as well as 64 tons of the pad contaminated with PCE and TCE.

The SVE system operated from August 1997 to May 1999, with ex-situ SVE treatment of “hot spot” soils accomplished in 2000 (to address a lingering PCE concern). The seep collection and treatment system (activated carbon) operated from August 1997 to September 2002. In excess of 6 million gallons of water were treated. From 2002 through May 2004, the SVE and seep treatment systems and groundwater monitoring wells were decommissioned.

Remediation standards established under the 1996 HSCA Consent Decree include surface water and soil. Since impacted groundwater daylighted as the impacted seeps, only a surface water standard was set for water. For surface water the site had to meet DEP aquatic life and in-stream drinking water standards under 25 Pa. Code Chapter 16, 92 and 93 for the parameters of concern. For soil, the site had to meet the following standards for the parameters of concern:

Benzene  
0.8ppm

Chloroform  
10.0ppm

1,1-Dichloroethane  
0.5ppm

1,2-Dichloroethane  
0.5ppm

Ethylbenzene  
70ppm

Methylene Chloride  
0.5ppm

1,1,2,2-Tetrachloroethane  
1.0ppm

PCE  
2.0ppm

Toluene  
100ppm

1,1,1-TCA  
20ppm

1,1,2-TCA  
0.8ppm

TCE  
2.0ppm

Xylenes  
5.0ppm

As shown on the attached documents, the soil has been remediated to the standards noted above. The seeps were remediated to well under DEP's chronic and acute aquatic life criteria for the parameters of concern for the tributary and Buffalo Creek. Since the tributary does not contain enough water to serve as a drinking water source, a comparison of the seep VOC concentrations post-remediation levels to flow adjusted theoretical VOC levels in Buffalo Creek indicate that the VOC levels in Buffalo Creek would be well below an in-stream drinking water standard for applicable parameters. Finally, bedrock groundwater was never impacted by operations at this site. However, DEP filed an Order with the Armstrong County Court for a deed restriction for the property to prohibit the installation of drinking water wells.

DEP granted approval to the site contractor to decommission the groundwater wells and the SVE and seep treatment system.

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"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there complete pathways between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

<b>"Contaminated Media"</b>	<b>Residents</b>	<b>Workers</b>	<b>Day-Care</b>	<b>Construction</b>	<b>Trespassers</b>	<b>Recreation</b>	<b>Food<sup>3</sup></b>
Groundwater	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Air (indoors)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Soil (surface, e.g., <2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Surface Water	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Sediment	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Soil (subsurface e.g., >2 ft)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>
Air (outdoors)	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>	<u>NO</u>

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors -- spaces for Media which are not "contaminated" as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media – Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media – Human Receptor combinations (Pathways) do not have check spaces ("\_\_\_\_\_"). While these combinations may not be probable in most situations, they may be possible in some settings and should be added as necessary.

X  _____  _____  _____	<p>If no (pathways are not complete for any contaminated media –receptor combination) – skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet) to analyze major pathways.</p> <p>If yes (pathways are complete for any "Contaminated" Media – Human Receptor combination) – continue after providing supporting explanation..</p> <p>If unknown (for any "Contaminated" Media – Human Receptor combination) – skip to #6 and enter "IN" status code.</p>
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Rationale and Reference(s):

All waste has been removed. The facility has been demolished. Impacted groundwater/seeps and soil have been remediated to acceptable standards as noted above.

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"** (i.e., potentially<sup>4</sup> "unacceptable" levels) because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

\_\_\_\_\_ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) – skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

\_\_\_\_\_ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) – continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

\_\_\_\_\_ If unknown (for any complete pathway) – skip to #6 and enter "IN" status code.

Rationale and Reference(s): \_\_\_\_\_

<sup>4</sup> If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a Human Health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

\_\_\_\_\_ If yes (all "significant" exposures have been shown to be within acceptable limits) – continue and enter a "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

\_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be "unacceptable") – continue and enter a "NO" status code after providing a description of each potentially "unacceptable" exposure.

\_\_\_\_\_ If unknown (for any potentially "unacceptable" exposure) – continue and enter "IN" status code.

Rationale and Reference(s): \_\_\_\_\_

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE – Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at Delta Chemicals, EPA ID PAD 088 915 822 located on Worthington Road, Worthington PA under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

YE

\_\_\_\_\_  
NO – "Current Human Exposures" are NOT "Under Control."

\_\_\_\_\_  
IN - More information is needed to make a determination.

Completed by: Carl Spadaro Date July 28, 2004  
Carl Spadaro  
Facilities Engineer – Waste Management  
PADEP – Southwest Regional Office

HSCP Project Manager Terry Goodwald Date July 22, 2004  
Terry Goodwald  
Project Manager – HSCP  
PADEP – Southwest Regional Office

Locations where References may be found:

References may be found at the offices of PADEP's Pittsburgh Office  
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**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

